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ABSTRACT

The premise for an exploratory study of classroom instructional activities was that a positive and substantial correlation exists between achievement and instructional time. The proportion of time that teachers spent on instruction was compared to time devoted to student discipline and control. Three contextual variables were measured through questionnaires completed by students and teachers in secondary school classrooms: (1) teacher demographic and personal perceptions; (2) aggregated student perceptions of class climate, instructional practices, and course content; and (3) demographic characteristics of students. Trained observers recorded teacher student interactions in the classsroom, focusing on who was doing what to whom, how, and in what context. The findings have implications for future educational research. Data suggest that time spent by teachers on behavior management may be easier to predict than the time spent on instruction. There appear to be sufficiently important differences between senior and junior high school classes to warrant studying them separately to understand "quantity of schooling" hypotheses at the secondary school level. The need for control of differences between subject areas when analyzing classroom time variables emerged as an important factor, although the reason for this was not clear. A weak association was found between most teaching variables and the proportion of class time spent on instruction and behavior. Tables are appended showing the data found for each variable. (FG)

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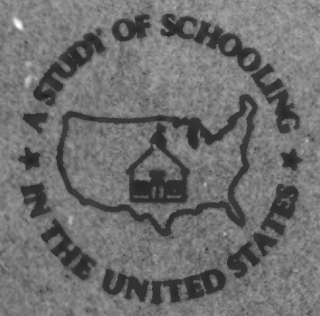
A STUDY OF SCHOOLING

Technical Report Series



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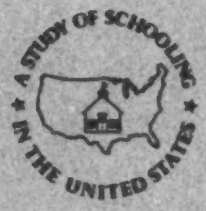

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THE CONTEXTUAL CORRELATES OF THE RELATIVE EXPENDITURES OF CLASSROOM TIME ON INSTRUCTION AND BEHAVIOR: AN EXPLORATORY STUDY OF SECONDARY SCHOOLS AND CLASSES

Kenneth A. Sirotnik

Technical Report No. 26

1981

A Study of Schooling is based upon the assumption that improving schools requires knowing what is happening in and around them. A comprehensive data-base of contextual information was obtained from students, teachers, administrators, parents and observers at all grade levels in thirty-eight elementary and secondary purposively sampled schools. *It is strongly recommended that readers of any technical report in this series first read Technical Report No. 1 which outlines the details, scope and limitations of the Study as a whole.*

It must be understood that this series of technical reports does not constitute the Study. Some reports are highly specific "molecular" inquiries while others take a more "molar" view across data sources, schooling levels, etc. Some reports are more methodological in nature arising out of issues in data analysis. Many of the reports quite naturally overlap in data analysed and interpretations rendered. Some authors have approached their task as consisting mostly of data description with little discussion beyond the presentation of the data. Others have ventured further into the realm of interpretation and speculation. *It must be further understood that data-based inferences can and do differ among researchers who come at the data from differing points-of-view.* Authors, therefore, are duly acknowledged for each report and are responsible for the material presented therein.

The Contextual Correlates of
The Relative Expenditures of Classroom Time on Instruction and Behavior:
An Exploratory Study of Secondary Schools and Classes

Introduction

The rationale for this investigation begins with the unconditional acceptance of the following premise: The quality of learning which takes place is, in large part, a function of the quantity of learning activity. More operationally, the premise implies a positive and substantial correlation between achievement and instructional time.

But the link-up between achievement outcomes and quantity of instruction will not be investigated here; it has already been demonstrated elsewhere. Given the motivating force of Carroll's (1963) model of school learning which pivoted around the concepts of time needed and time spent in learning, many studies have shown the predicted increase in achievement as a function of time well-spent. For example, Bloom (1974) reports such findings with particular emphasis on the individual learner and the benefits to be accrued with increased time on task during the early stages of mastery learning. Wiley (1974) demonstrated the same finding at the school level by simply regressing "time"--as defined by the product of average daily attendance, number of hours per school day and number of days per school year--on standardized achievement subtest scores.

Many other studies, both theoretical/model-refinement oriented (e.g. Anderson, 1973 and Wiley and Harnischfeger, 1974) and empirically oriented (e.g. Lahaderne, 1967 and Good and Beckerman, 1978) have also supported the above premise. The same general theme, and elaborations on it, have been echoed in reviews such as those by Rosenshine and Berliner, 1978 and Stallings, 1980. Even major studies like the Coleman report

(Coleman, et.al., 1966) which have concluded that schools have little educational effects contain data which indirectly support the "quantity of schooling" hypothesis (Bloom, 1974).

This study, based on the data collected in A Study of Schooling, begins to tackle the next issue, namely the description of the contextual circumstances under which more or less instructional activity takes place at the level of the classroom.[1] Considering the potential impact time spent on behavior, i.e., discipline and control, has on the learning environment of the classroom, it seems equally important to include this "quantity of schooling" variable as well. Although the literature has received little attention in "quantity of schooling" studies and is focused mostly on elementary classes, consistent findings of inverse relationships between behavioral time and achievement outcomes have been evidenced. (See, for example: Cobb, 1972; McKinney, et al., 1975; and Harper, et al., 1978.) Clearly, understanding the correlates of time on behavior can have important implications for classroom management and, therefore, student learning.

For the purposes of this investigation, we will focus on the proportion of time that the teacher spends on instruction and behavior in the classroom. It can be argued that focusing on the teacher can either over-estimate or under-estimate the instructional time of students; the former, since some students can be expected to be non-task oriented during instruction, and the latter, since some students can be expected to be task-involved when the teacher is not instructing. Since we did not observe instructional time on a per student basis, and since class aggregate measures are used in the analysis, observing the teacher would seem to be a reasonable compromise. As noted above, focusing on the proportion of teacher time spent in behavioral control is also important, considering that (a) discipline is an unavoidable and critical part of classroom management and (b) it interfers with the time available for instruction. Time spent in routines and miscellaneous other non-instructional

and non-behavioral modes (e.g., social interaction) is implicit in the analyses for instruction and behavior since the proportions of time spent must all total unity.

Three major sets of contextual variables will be considered in these analyses: (1) teacher demographic (and biographic) characteristics, personal beliefs and practices in regard to the teaching profession, and perceptions of their jobs focusing on both organizational (school) and instructional (class) aspects (2) aggregated student perceptions of class climate, instructional practices, and course content (3) demographic characteristics of the class.

Before presenting the findings, however, more specific discussions of the sample, observation method, variable definitions and analytic methods are in order.

Sample

Part of the data-base accumulated during A Study of Schooling consists of observational data on 887 secondary classrooms and survey data on the students and teachers of these classes. Classes were randomly sampled from each of 25 secondary schools such that specified quotas in each of eight major subject areas would be approximated. The 25 schools represent a purposive sample of schools across the nation, with considerable variation in such factors as school size (pupil enrollment), economic status of the community, race/ethnicity of student body, and geographic location and characteristics. Table 1 presents an accounting by subject matter of the 525 senior high school

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Insert Table 1 about here

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and 362 junior high/middle school classes included in the sample.

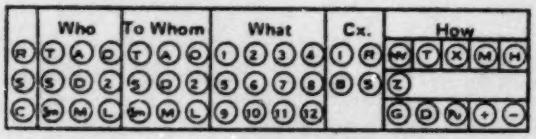
Observation Method

The observation instrument utilized in A Study of Schooling is a modified version of that developed at the Stanford Research Institute by

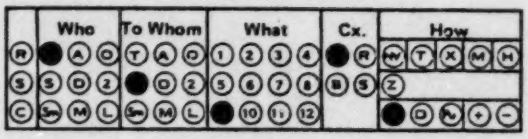
Jane Stallings and her associates for the evaluation of Project Follow Through (Stallings and Kaskowitz, 1974). The original instrument was modified mainly in three ways: (1) it was generalized for use at both elementary and secondary schooling levels, (2) variables were separated out by course content and (3) variables were separated out by classroom contexts: instruction, behavior, routine and the remainder (which we called "social").

Focusing on the teacher and his/her interactions with students, it was this last modification that enabled the computation of proportions of time spent on instruction and behavior control. The section of the instrument that provided this information was the Five Minute Interaction (FMI). On the average, 60 FMI frames were filled out by highly trained observers in each of 4 five minute intervals approximately evenly spaced over the duration of the secondary class period. Most classes were observed for 3 full periods during the first two weeks that data were collected in each school. Thus, approximately 4 FMI's/observation X 5 minutes/FMI X 3 observations or 60 minutes of class time was sampled in this fashion.

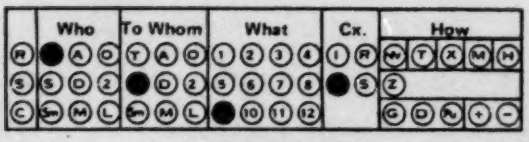
Each FMI frame consisted of the following format capable of optical scanned scoring:



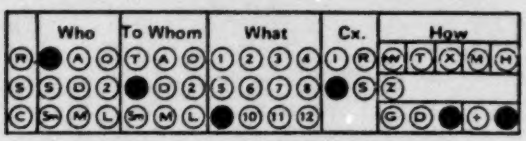
Without belaboring the details, one of these frames would be "bubbled" in on the average of every 5 seconds depicting who was doing what to whom and how and in what context. For example, if the teacher (who) was correcting (what) a student (whom) with guidence (how) during instruction (context), the frame would be bubbled in by the observer as follows;



A typical pattern indicating behavioral control is



in the case of mild discipline or



in the case of a more major punitive action.

The instrument is exceedingly complex (but surprisingly trainable) yielding thousands of potential variables. The reader is strongly advised to consult Giesen and Sirotnik (1979) for a more comprehensive and detailed explanation of the observation system. It should be further noted that observer reliability was primarily inferred from the training specifications. All observers participated in an intensive 8-9 day training program utilizing slides, video-tapes and actual classroom experiences to learn and utilize the observation coding system. All observers were required to demonstrate their competency according to the following criteria: 80% of the specimen video-taped classroom situations had to be identified correctly at a minimum rate of 50 complete frames per FMI. For reasons of time and resources, the complete 3-day observation protocol for any given class was obtained from only one observer. However, a subsample of single-day observations on 299 classes were recorded by two observers. Inter-observer reliabilities (intraclass correlations) for the proportions of time on instruction and behavior were .83 and .79 respectively, computed over all secondary classes in this subsample (Sirotnik, 1981).

Variable Definitions

The computation of instructional and behavioral time was quite straightforward. The proportion of time spent on instruction was simply that proportion of the 720 FMI frames accumulated (on the average) per classroom which were bubbled as I-context frames. Time on behavior was computed identically except using the B-context frames. Although these are really proportions of finite "split-second" events, the continuity of the FMI procedure allows the results to be reasonably interpreted as estimates of classroom time.

The three major sets of contextual variables were defined mostly by the responses of teachers and students to certain items on their respective

surveys. The tables in Appendix I identify each of these variables as defined by the survey items and include the variable means, standard deviations, and correlations with the proportion of time observations. In the cases of variables which are composite scores on scaled items (e.g., educational beliefs, organizational climate and classroom climate), only exemplary items are indicated. (More details on the derivation of these scales can be found in Sirotnik, 1979.) The classroom "demographic" data were obtained through document review and personal reports by school administrators and by aggregating the several student demographic characteristics.

Method of Analysis

The basic exploratory research question of this study is one of relationship between two sets of variables. Canonical regression analysis is a convenient tool for dealing with the multivariate nature of this type of research question. In this case, there will generally be half a dozen or more contextual variables in one set being related to the other set of two variables, viz., the proportions of time measures on instruction and behavior. Two orthogonal (independent) canonical solutions, therefore, emerge which specify the relationships between the two sets of variables. The canonical correlation in each case indicates the overall strength of association between the two sets of variables. Moreover, for each solution, regression weights are computed for each variable which, in standardized form, are relative indicators of the variables' contribution in predicting the canonical variate. However, for purposes of interpreting the substance of the multivariate relationship, it has been recommended (e.g. Darlington, et al., 1973) that a different set of variable weights may be computed, i.e. the loading coefficients, which are simply the product-moment correlations of the variables

in each set with the canonical variates.[2] The whole process of interpretation will become clearer by example.

Instead of including all of the contexual variables in a single analysis, considerable substantive clarity will be achieved by treating the six conceptually distinct sets of variables (see Appendix I) separately. Separate canonical analyses will be conducted for the three teacher variable subsets and for the two sets of aggregated student perception and classroom characteristic variables.[3] Moreover, it might be expected that the multivariate relationships may be different for different schooling levels (senior and junior high) and for the eight different course contents. Therefore, each of the above analyses will be done separately by level and by content producing 66 separate analyses in all.

The focus of this study is clearly on the classroom as the conceptual unit for statistical analysis. It is quite possible, however, that systematic school effects can confound the interpretation of relationships at the class level. One possible analytic solution is to statistically eliminate school differences before doing the canonical regression analyses. This can be done by subtracting the school mean on each variable from the corresponding classroom value, whether it be a teacher, aggregated student or class characteristic data type. The analysis--designated a pooled within school analysis--then proceeds as usual, but using these residual values.

Additionally, we can perform what is called a between school analysis by utilizing the school as the unit and the means noted above as the data entries. Clearly, this analytical approach accomplishes the exact opposite of the aforementioned analysis; the between approach is only sensitive to systematic differences between schools. Therefore, by doing both pooled within and between analyses, it becomes clear which contexual variables are associated with relative instructional and behavioral time for reasons which

are either primarily class- or school-focused.

The total analysis--based on the raw, unadjusted (for school effects) class data--obviously confounds the two kinds of effects. This is more or less the case to the extent that systematic differences exist between schools. For example, Table 2 lists all the variables used in this study and their

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Insert Table 2 about here

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ratios of between school to total variance (eta coefficients squared). With the exceptions of some obvious community and school based measures (e.g., race/ethnicity and length of class period), most of these coefficients are low. In effect, much more variance exists within schools relative to between schools. For this reason the total analysis and pooled within analysis can be expected to be much more similar to each other than to the between analysis.[4] Nevertheless, the total analysis can still be significantly affected by important between school effects. We will see shortly how certain variables which are significant (statistically and substantively) in the total analysis are reduced to insignificance in the pooled within analysis and are significantly highlighted in the between analysis.[5]

Finally, the issue of statistical significance should be addressed further. Although a considerable number of classes are available for analysis, it is not the kind of random sample required in the strict mathematical sense for the use of tests for statistical inference. Nevertheless, in view of the exploratory nature of this study, such tests can be of heuristic value, and it is in this spirit that they will be reported. Although the results section may focus mostly on these "significant" outcomes, the interested reader is encouraged to explore all the results as a means for generating (not confirming) research hypotheses for further study.

Results

For the six subsets of contextual variables defined in Appendix I, separate canonical analyses were performed regressing the variables in each set on the proportions of class time spent in instruction and behavior modes. Two canonical variates, therefore, emerge in each analysis. Table 3

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summarizes the canonical correlations associated with each variate when analysing the data over all classes and classes separated by level of schooling (senior and junior high). Additionally, each analysis is repeated utilizing either the total, pooled within, or between approaches for the reasons noted above.

Several trends are clearly in evidence. First, the total and pooled within correlations, as anticipated, are very similar with the former being slightly higher than the latter due to non-random between-school differences. The one main exception to this trend is for contextual variable subset F. The substantial difference between the first variate canonical correlations for the total and pooled within analysis (.41 and .28 respectively) suggest relatively strong between school effects on one (or more) classroom characteristic variables. (We will explore just what the nature of these effects are shortly.) Also expected are the much higher correlations for the between analysis, again a consequence of aggregation based upon a non-random grouping factor (viz., schools).

Second, in most analyses, the largest canonical correlation (i.e., that associated with the first canonical variate) is descriptive of the relationship between the contextual variables and time spent on <u>behavior</u>.

This is especially interesting in view of the relatively limited ranges for the observed percentages of behavioral time in comparison to those for time on instruction. (See Table 4.) Moreover, it should be noted that the proportions

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Insert Table 4 about here

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of time spent on instruction and behavior are relatively uncorrelated over all classes ($r = -.15$); instructional time and the remaining time (routines/social interactions) are almost perfectly inversely correlated ($r = -.98$); and, as expected by the ipsative nature of these three time measures, the proportions of time spent on behavior and routines/social are correlated nearly zero ($r = -.02$). Thus, predicting time spent on instruction is nearly the inverse of predicting time on routines plus other non-task social interaction, whereas predicting time on behavior is relatively independent of these variables.

Third, the canonical correlations increase in magnitude as the constructs of the contextual variable subsets increase in proximity to the specific classroom domain. In effect, subsets A, B and C have less to do with class-specific attitudes and perceptions, and they register few significant results. Subsets D, E and F were operationally defined to gather information about the specific classes, and they register many significant results. In fact, it is subsets E and F that register canonical correlations of substantial size. Interestingly, these are the only subsets which do not contain teacher data; instead, they are based on aggregated student perceptions and demography and classroom characteristics (e.g., size, time of day, etc.). Furthermore, it is only in these subsets that time on instruction is more strongly predicted.

These trends also hold up fairly consistently for each of the subject matter areas as evidenced in Table 5. (Only the pooled within analyses are

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Insert Table 5 about here

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presented thereby eliminating any interpretive difficulties due to the presence of systematic school effects.) The fewer statistically significant results in this table is a direct function of the reduced sample sizes when analysing classes separately for each subject matter, especially for foreign language and physical education. Nevertheless, the trends toward higher relationships and more predictability for time spent on behavior for contextual variable subsets closest to the class domain (particularly student perceived class climate) are clearly present. Perhaps the only reliable exception is in the Arts, where time spent on instruction appears to be most predictable.

Given this summary of general relationships, we can now turn to the more specific analyses of what variables in which subsets tend to be more or less predictive of how time is spent in the classroom. The results for the analyses over all classes will be presented first. This will highlight the most reliable of the findings and will also facilitate discussion of the several differences that will be noted when the same analyses are looked at separately by schooling level and by subject matter.

Tables 6 through 11 show the canonical loading coefficients for both canonical variates for each of the six contextual variable subsets utilizing

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Insert Tables 6-11 about here

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total, pooled within and between analytic approaches. Again, these three approaches are presented not only to highlight which contextual variables tend to be more school- than classroom-related, but also to illustrate the obvious methodological issue so often ignored in behavioral research.

Since the main focus of this study is on the classroom, however, the discussion will eventually focus mostly upon the pooled within results, which, for each level of schooling and for each subject matter, are presented in the tables in Appendix II.

Since this is essentially an exploratory study, all the above tables are included and the reader is encouraged to view them descriptively. However, in order to avoid an extensive discussion and to reduce the possibility of interpreting unreliable associations, we will limit the discussion only to those results statistically significant (in the sense described above) beyond the five percent level.[6] Thus, contextual variable subset A (teacher demography/biography) and foreign language and physical education subjects will not be pursued further due to their weak and/or insignificant canonical correlations.

Teacher Professional Beliefs and Practices (Subset B)

This contextual variable subset is very weakly associated with the proportion of time spent on instruction. In fact, it is the only subset which is not more systematically related to time on behavior. The telling contextual variable is the teachers's educational belief regarding the role of student participation in classroom affairs. The -.63 canonical loading on this variable in conjunction with the .82 loading on instructional time indicates that teachers tending to be more open to student involvement in decision-making tend also to spend relatively less time in instructional activities.

Interestingly, it appears that this effect is totally a within class phenomenon. The between analysis clearly emphasizes the prediction of time on behavior, not based upon beliefs regarding pupil participation, but those based upon discipline and control. Not surprisingly, analysis of A Study of

Schooling data on school problems has revealed large school differences on student misbehavior and teacher discipline as major problem areas.

Finally, several interesting trends emerge when looking at the data separately by schooling level and subject area. At the senior high level, teachers' beliefs regarding student participation is, again, a significant correlate of instructional time; but so also are the variables relating to teachers' professional practices and views on the intellectual function of schooling. Classes with teachers who are more involved in professional activities and who are more inclined to view instruction in the intellectual domain as the single most important schooling function are observed spending relatively more time in instruction.

At the junior high level, these trends disappear; in fact, the first canonical variate is associated with time on behavior rather than on instruction and is not really reliable enough to interpret further.

The only reliable trend in the separate subject areas is that for the Arts. Over 25% of the variance in time on instruction is, in part, predicted again by teachers' beliefs regarding student participation and the intellectual function of schooling. But several interesting differences occur. No longer is the professionalism variable important; instead, more variables relating to teachers' beliefs regarding schooling functions enter the equation. In effect, more time is observed on instruction in those arts classes where teachers are more concerned with maintaining academic standards and more apt to single out the intellectual and less apt to single out the vocational function of schooling.

Teacher Perceptions of the Work Environment (Subset C)

Again, weak associations are evidenced with what is really mostly a bipolar canonical variate slightly more weighted on behaviorial time but

substantially and inversely weighted on instructional time. The most heavily weighted contextual variable is that relating to a global teacher satisfaction score based upon a number of specific areas in their planning and teaching (e.g., setting goals, scheduling use of time, evaluating students, etc.) Interestingly, we nearly classified this variable in subset D since it was so obviously classroom related. However, the question was asked more in the context of the entire work experience of the teacher. Nevertheless, the result is in keeping with the trend towards higher relationships the closer the variables are to the actual classroom setting. In this case, lesser teacher satisfaction with the various curricular elements is associated with relatively more time spent on behavior and less on instruction. Again, this finding is most consistent at the high school level; no reliable trends are evidenced at the junior high level or for the separate subject areas.

And again, the between analysis suggests a somewhat different school level phenomenon, one apparently associated more with the extent to which teachers, as a group, like the actual "hands-on" classroom teaching part of their job more than any other aspect (e.g., preparation, routines, interaction with other staff, etc.). To the extent that they do not, relatively more time is spent on behavior in classrooms at their schools.

Class-Specific Teacher Perceptions and Practices (Subset D)

Although less than ten percent of the variability in time measures is accounted for by this variable subset, a noticeable increase in association size and significance is present with these contextual measures. Both canonical variates are interpretable, the first (as usual) being associated with behavior and the second with instruction. The first (and strongest) variate is marked primarily by the teacher's (a) perception of how appropriate the materials and content are in relation to the students' ability

level, ethnic/cultural background and interests and (b) report of how often students work alone (in contrast to working in small groups or with the total class). To the extent that teachers perceive the materials and content appropriate for a greater proportion of students in the classroom and report that student more often work alone, relatively less time is observed in the behavioral domain. Time on instruction is more weakly predicted, mainly by the increasing frequency with which teachers report that students work together as a total class.

Between school effects are again present and different. Increased reliance on state or district recommended textbooks and state curriculum guides, more frequent use of behavioral objectives, and more perceived relevance of class content for students are all associated with greater proportions of class time on behavior at the school level. Aside from the "perceived relevancy" variable, the others are the most likely variables in this subset to be influenced by school (and district) level curriculum policy.

Pursuing the analyses further, the above results become clarified when they are seen at the separate levels of schooling and content areas. The senior high school analysis more clearly identifies the grouping style variables as predictors of time on instruction and the content appropriateness variable as a predictor of time on behavior. Once again, the only significant variate in the junior high analysis deals with time on behavior, which appears to decrease in classes with teachers who more frequently have students working alone and who expect more time to be spent on homework.

The only subject area with a sizable and significant first variate is mathematics. Time on behavior is inversely correlated with how appropriate the teachers perceive the content to be in terms of ability, background and interest of the student. This probably accounts for the strong presence of this variable in the overall analysis.

Class-Specific Student Perceptions (Subset E)

This subset of contextual variables is more strongly related to time on instruction and behavior than any other set of variables included in this study. Across all classes, over 15% of the variance in time on behavior is accounted for by these variables; moreover, this percentage increases to nearly 25 for each of the two levels of schooling and for the six significant results obtained in the separate subject areas, viz., English, math, social studies, science, the Arts, and vocational education. Nearly 5% of the variance in time on instruction is accounted for across all classes; nearly 6% is accounted for in the separate high school analysis; and over 15% is accounted for in the English and social studies analyses. (Note the clearly insignificant results for predicting time on instruction at the junior high level and for all subject areas except English and social studies for this variable subset.)

An interesting pattern of differences and similarities emerges when the results over all classes are looked at comparatively by level of schooling and by subject areas. Table 12 charts the most salient predictors of time

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spent on behavior for each of the analyses with significant first canonical variates. Looking at the overall analysis, 8 of the 14 contextual variables (7 of the 8 are class "climate" variables) highlight the relationship between aggregated student class perceptions and time spent on behavior. Specifically, relatively more time observed in the behavioral context is associated with perceptions of more student apathy and class dissonance and less teacher affect, favorable instructional practices, student compliance, peer esteem, pleasant classroom appearance, and liking of the subject matter.

This pattern is reproduced perfectly for the separate analysis of senior high classes and almost perfectly for the junior high analyses, the exceptions being the lack of peer esteem and subject liking as important descriptors. Most of the inconsistencies in variable loadings for the separate subject areas are due to (a) the lack of many significant loadings in the Arts subject area and (b) the fewer significant loadings for the peer esteem, classroom physical appearance, and subject liking variables. The most notable remaining differences are the absence of teacher affect and student compliance as an important descriptors in the English and social studies analyses respectively. Equally notable are the presence of certain variables which are not ordinarily important: teacher favoritism in social studies and vocational education; task difficulty in vocational education; student cliqueness in English; student decision-making in the arts; and subject relevance in English, mathematics and science.

The results for the proportion of time spent on instruction are quickly presented since only one variable, viz., student decision-making, emerges as an important correlate in any of the analyses with sizeable and significant second canonical variates. Moreover, the loading is negative indicating that relatively more perceived student decision-making in the classroom is associated with relatively less time observed in the instructional domain. Recall the parallel finding above for teachers' beliefs regarding the role of student participation in class.

Finally, the between analysis suggests, for the most part, that much of the above discussion for classes within schools carries over to between school differences, at least for predicting time on behavior. (Notable exceptions are the results for the climate constructs of student decision-making, compliance and competitiveness and class physical appearance.)

Class Characteristics (Subset F)

Although this variable subset has somewhat weaker associations with observed time than did the previous subset, these class characteristics are particularly interesting in that they provide one of the clearest examples of the analytic consequences of between and pooled within approaches.

To begin with, the researcher relying on the total analysis would conclude that class size, mean age and percent white were the primary correlates of the proportion of class time spent on behavior. However, this conclusion would be quite misleading in two important respects: (1) The race/ethnicity effect is really a school-by-school phenomenon and nearly disappears in the pooled-within analysis. To further check this result, analyses were run separately for those classes within schools known to be racially mixed; again, the variable "percent white" had negligable canonical loadings. (2) The effect of class period is "washed-out" in the between school analysis. Clearly, the average period at the school level has little meaning or variance; within schools, it is probably a good measure of teacher and student fatigue. Note also the consistent effect of class size both within and between schools, although, in the latter analysis, the variable would more appropriately be titled "school size." (Age is also a consistent effect in both analyses; however, the between results are mostly due to the inclusion of both junior and senior high schools in the same analysis.

Turning to the pooled within analysis, larger class sizes, classes scheduled later in day, and classes with younger students on the average tend to be associated with more time observed in the behavioral context. This pattern is duplicated at the senior high level. At the junior high level, scheduled period is still a relevant descriptor, but age and class size are less important. The most important correlate appears to be whether or not classes are in the

upper curriculum track; when they are, less time is spent on behavior. This latter finding is most likely subject-related; and, inspecting the four subject areas that are ordinarily tracked (English, mathematics, social studies and science), only English and mathematics classes clearly evidenced this tracking effect. For the vocational education classes, only class size and student age are significant correlates, the fatigue (period) factor apparently being less important.

Over all classes, this tracking variable is the single best predictor of the proportion of time spent on instruction. Of secondary importance is the sex distribution in the class. Classes in the upper track levels and classes having relatively more females tend to be observed more in the instructional context. Pursuing this finding through the separate analyses, we find the tracking effect only at the senior high level and the sex effect only at the junior high level.

With only one exception, no significant canonical variates associated with instructional time emerged for the separate content areas. The one exception, however, was notable: the first significant and sizeable canonical variate in the Arts analysis was instructional--time on behavior in this subject area was not predicted well at all. Furthermore, most of the variables above associated with time on behavior are, for the Arts, associated with time on instruction with one interesting twist: the larger the class size, the more time observed in instruction. Also, more time in instruction is associated with younger students and relatively more female students in the classroom.

Finally, the between analysis suggests, simply, that the variation between schools on the aggregated proportions of classroom time observed in instruction is best accounted for by average class size. This variable--school (class) size--also contributed to the prediction of time spent on discipline

and control. In fact, this second canonical variate in the between analysis is really bipolar suggesting that size is a critical variable for both instructional and behavioral domains.

Discussion

Overall, these results are, at once, both interesting and perplexing, the latter because of the generally low relationships between the observed time proportions and the various contextual variable subsets and the former because, even so, the relationships that do exist are systematic and of substantive interest. Moreover, the trends are sufficiently strong so as to unequivocally illustrate the profound methodological consequences of employing different analytical models to describe the multivariate structure of the relationships.

The possible reasons for the low canonical correlations are the usual ones faced by all behavioral researchers: (1) not having identified all relevant contextual variable subsets and/or all relevant variables within subsets (2) unreliability in contextual variables and/or observed time proportions. Of course, it is also possible that the results are simply confirming true low relationships between the variables under study. More likely than not, all these possibilities are operant at some (usually indeterminant) level.

The only possibility on which we have some data is that concerning the reliability of measures. On the contextual variable side, many measures are single, survey-type, self-report items for which point-in-time reliability (internal consistency) is not possible to assess. Stability (reliability over time) would be a more important index, but this was not a longitudinal study. Many other contextual variables, however, were in the form of scales composed of several (or more) items which were usually derived

through factor(and/or cluster) analyses and which usually exhibited substantial internal consistency (alpha) coefficients (Sirotnik, 1979). As reported earlier for the observed proportions of time, we have two kinds of information to suggest reasonably reliable estimates. First, observer training was extremely rigorous and demanding in terms of final performance criteria (Giesen and Sirotnik, 1979). Second, inter-observer reliability coefficients for observed time on instruction and behavior computed over all secondary classes are .83 and .79 respectively (Sirotnik, 1981).

Remember, also, that this is an exploratory study. We did not set out to confirm theoretically-based hypotheses regarding the structure of relationships between time utilization and the various subsets of contextual variables. Were we to posit such hypothetical connections ex post facto, perhaps more sophisticated analytical methods of causal modeling (e.g., LISREL, Joreskog and Sorbom, 1978) would provide greater insight to these results. However, it is doubtful that the more salient results into these in terms of their substantive implications for future research endeavers. And it is to a discussion of these findings that the remainder of this section is devoted.

First, the data presented above suggest that time on behavior may be easier to predict than time on instruction. But then many of the variables which are included in the study have strong affective components which might be expected to be sensitive to discipline and class control. No doubt, other, more "low inference" descriptors of classroom processes are available which would be more sensitive to instructional time. The several variables which do stand out in the significant canonical variates related to time suggest this to be the case: teacher reported grouping techniques, student reported decision-making opportunities, and, most clearly, the classroom organizational characteristics of size (a school effect) and tracking level

(a class within school effect). Although the relationship is weak, it is intriguing to see that decision-making as perceived by students is inversely associated with time on instruction. When juxtaposed with the same finding for teachers' beliefs regarding the role of students as participants in the decision-making process, this result begins to suggest that what many educators have argued to be a desirable feature of the classroom learning environment may result in a less manageable instructional situation. Most likely, it is a problem with the quality of implementation of the construct rather than with the construct itself. Moreover, implementing the construct of student decision-making would necessarily take some time away from instruction.

Second, there appear to be sufficiently important differences between senior and junior high school classes to warrant studying them separately as we seek to understand "quantity of schooling" hypotheses at the secondary level. One of the more important differences centers on the near absence of significant variates associated with time on instruction at the junior high level. Instead, the interpretable associations are with time on behavior and often involving contextual variables which predict time on instruction at the high school level. Notable examples are the teachers' reports of grouping styles and the tracking level of the class. In high schools, grouping styles which have students less often working alone and classes which are in the upper tracks tend to be associated with more time on instruction. In junior high schools, grouping styles which have students more often working alone and classes which are in the upper tracks tend to be associated with less time on behavior. One might begin to speculate that certain instructional practices are used, in part, as policing devices, more so at the junior than senior high school level. (The emergence of tracking as a significant correlate raises critical questions of educational equity for those students systematically relegated to one track or the other. This

issue has been explored in much detail using a variety of data collected in A Study of Schooling. See Oakes, 1981.)

These are not surprising results considering the energy level and maturational upheavals taking place for students in the 12-14 year age range. Much of the data collected in A Study of Schooling point to substantially different climates at these two levels of schooling. Consider the noticeable absence of peer esteem as a significant correlate of time on behavior at the junior high level. Perhaps, these adolescents are simply too immature to systematically judge the level of peer support at the classroom level. This ambience or climate differential between levels appears to affect teachers as well. At the senior high level, a number of professional beliefs and practices are correlated with time on instruction. Not so at the junior high level, wherein what little associations exists are with time on behavior rather than instruction.

Third, the results of this study also suggest the importance of controlling for subject area differences when accounting for the expenditure of classroom time. One of the more surprising results is the clear tendency for time on instruction to be most strongly predicted in the Arts. (The significant first canonical variates in all other subject areas were associated with time on behavior.) The reasons for this are not at all clear, although perhaps a kind of self-selection effect arises out of the fact that the Arts sample represented a vast array of course titles, many of which were electives requiring students and teachers with special skills and interests (e.g., drama, creative writing, orchestra, etc.). The potential for a very individualized and goal-oriented curriculum may exist in these classes. The unique pattern of associations between time measures and student perceptions for the Arts classes is compatible with this scenario: (a) the more students perceive competition among members of the class,

the more time is observed in instruction and (b) the more student decision-making perceived, the less time is observed in behavior. The Arts classes are also the only content area in which (a) class size is clearly the primary predictor of time in instruction (rather than behavior) and (b) teacher beliefs (academically oriented) are predictive of time in instruction. (The size effect, however, may be, in large part, due to the orchestra/band classes with relatively huge enrollments.) Equally intriguing are the remaining differences and similarities between subject areas, particularly in regard to the student perception variables as they correlate with time on behavior (see Table 14). We leave further speculation to the reader, noting that the variances for each variable are all very nearly equal for each subject area thereby eliminating differences in response variation as a possible explanatory basis.

Finally, the differential predictability of the six contextual variable subsets is worth reiterating: the more proximal the variable subset is to classroom based phenomena, the higher the canonical correlations with time on instruction and behavior. The contextual variable subset with the highest associations are those derived from the aggregated perceptions of students about the subject area and the classroom learning environment. Although by no means conclusive, these findings suggest the importance of the classroom as an important point of intervention towards effecting significant educational improvement. In particular, the classroom learning environment may be an important focus in this effort.

This speculation, of course, requires some belief in the validity of aggregated student perceptions as indicators of genuine classroom phenomena. Data collected in A Study of Schooling suggests this to be the case (Engstrom, 1981). The psychometric implications of developing measures relying upon either (or both) within or between group variation have been considered

(Sirotnik, 1980) and applied to the scaling of the class climate dimensions used in this study (Sirotnik, Engstrom and Nides, 1980). Moreover, it has been amply demonstrated that learning environment constructs can predict achievement outcomes (Walberg and Ahlgren, 1970). There is reason to believe, therefore, that these aggregated student perceptions are measuring important classroom-based phenomena relating to teacher, students and teacher-student interactions.

Conclusion

We have found nil or weak associations between most teacher variables and the proportion of class time spent on instruction and behavior. Relatively higher relationships exist with variables based on student perceptions and on classroom characteristics. Interesting differences and similarities can be found when controlling for schooling level or subject matter. But, by no means, have we exhausted the number of potentially important constructs in any of the contextual domains included in this study. We can simply add the results of this investigation to the growing body of literature which suggests the complexity of understanding the context within which learning takes place.

At least for the sample in A Study of Schooling and the variables included in these analyses, time on behavior appears to be easier to predict than time on instruction. But it is important to note that although the proportions of time allocated to behavior and instruction are not highly correlated in these data, a greater proportion of time on behavior implies less absolute time left for instructional (or other) purposes. In any case, researchers currently focusing on "time on task" would do well to include "time on discipline and control" to more fully understand the "quantity of schooling" hypothesis within the total learning context of the classroom.

Finally, significant school level effects exist and some have been evidenced in this study. Perhaps the most educationally relevant of these is

the association of school (and thus classroom) size with both time on instruction and behavior. Nevertheless, within school effects at the classroom level are equally significant--particularly with respect to class climate constructs--and perhaps even more relevant insofar as they may be more amenable to change. Researchers will be quite amiss if they focus exclusively on school effects when attempting to throughly understand (i.e., utilizing a contextual perspective) "quantity of schooling" hypotheses.

Footnotes

1. More detailed information on A Study of Schooling can be found in the series of four sequential articles published in the Phi Delta Kappan. The first in this series, Goodlad, Sirotnik and Overman (1979), includes a conceptual overview, the sample design, and the types of data collected.

2. There is an analogous situation in factor analysis wherein the pattern coefficients (factor loadings) are used for interpretive purposes and the regression coefficients are used for purposes of predicting factor scores.

3. Although correlations between variable subsets exist, they are not so high so as to mitigate against sensible interpretations of the separate analyses.

4. It would seem that this finding can be generally expected whenever the variables are perceptual/attitudinal in nature and non-random grouping factors are relevant. See Sirotnik, 1980 for a further example.

5. The issues in multilevel data analysis and interpretation have only recently been taken seriously by applied researchers. These issues can be quite complex, both mathematically and substantively. The interested reader will find Cronbach's (1976) work and Burstein's (1980) recent review good beginning points.

6. It is not completly clear exactly how to proceed with significance tests for between analyses. Both weighted and unweighted between school canonical regressions were computed. The tests for the former are clearly inappropriate and exaggerate the significance of results. The tests for the latter are more nearly appropriate but may be a bit more conservative. Since, for these data, the weighted and unweighted analysis produced nearly identical canonical loading coefficients, the latter analyses are reported here.

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Table 1

Number of Observed Classes
in Each Level of Schooling and Subject Area

Subject Area	Senior High Schools	Junior High Schools	Total
English	83	73	156
Mathematics	71	68	139
Social Studies	76	53	129
Science	65	41	106
The Arts	65	44	109
Foreign Language	27	11	38
Vocational Education	105	48	153
Physical Education	33	24	57
Total	525	362	887

Table 2

Relative Magnitude of Between-School Variation as Indicated by the Correlation Ratios (Eta Coefficients η) Squared for All Variables in Study [a]

Variable Type [b]	η^2 Senior	η^2 Junior
Teacher Demography/Biography:		
A1. Sex	.07	.06
A2. Race/Ethnicity	.22	.23
A3. Educational attainment	.15	.18
A4. Years of teaching experience	.18	.15
Teacher Professional Beliefs and Practices:		
B1. Professionalism	.15	.11
B2. Reason became teacher	.03	.05
B3. Discipline and control	.06	.03
B4. Basic subjects and skills	.05	.05
B5. Student concern	.03	.06
B6. Student participation	.06	.13
B7. "Soft" on academic standards	.17	.10
B8. Functions: Intellectual	.08	.02
B9. Functions: Personal	.07	.04
B10. Functions: Vocational	.04	.06
B11. Would you choose the education profession again?	.09	.04
Teacher Perceptions--Organizational Focus:		
C1. Best part of job	.06	.06
C2. Adequacy of help	.10	.10
C3. Satisfaction with evaluation	.10	.16
C4. Adequacy of resources	.16	.18
C5. Influence: Instructional	.23	.15
C6. Problem solving/decision-making	.26	.24
C7. Principal leadership	.21	.22
C8. Staff cohesiveness	.28	.14
C9. Organization of the school is a problem	.14	.17
C10. Grading of the school	.34	.32
C11. Satisfaction with Curriculum	.06	.04
Teacher Perceptions and Practices--Class-Specific Focus:		
D1. Reliance on texts/guides	.23	.17
D2. Use of behavioral objectives	.06	.13
D3. Homework expectations	.07	.07
D4. Relevancy of content	.02	.04
Teacher Perceptions and Practices--Class-Specific Focus (continued):		
D5. Appropriateness of content	.09	.15
D6. Grouping style: Alone	.04	.07
D7. Grouping style: Small groups	.03	.08
D8. Grouping style: Whole class	.04	.03
D9. Hours/week preparation	.02	.07
D10. Individualization	.05	.08
Student Perceptions of Content and Classroom Learning Environment:		
E1. Teacher affect	.08	.09
E2. Teacher favoritism	.09	.04
E3. Instructional practices	.06	.07
E4. Task difficulty	.07	.16
E5. Student decision-making	.05	.04
E6. Student apathy	.12	.07
E7. Student compliance	.13	.11
E8. Class dissonance	.12	.25
E9. Student cliqueness	.24	.15
E10. Student competetiveness	.07	.19
E11. Peer esteem	.16	.18
E12. Class physical appearance	.33	.12
E13. Relevancy of content	.09	.12
E14. Subject preference	.03	.03
Classroom Characteristics:		
F1. Class size	.12	.15
F2. Period number	.07	.03
F3. Track: Low	.04	.05
F4. Track: Average	.07	.09
F5. Track: High	.04	.08
F6. Scheduled class duration	.70	.67
F7. Percent male	.01	.03
F8. Mean age	.16	.30
F9. Percent white	.93	.94
Observed Class Time:		
Instruction	.11	.16
Behavior	.15	.15

a $\eta^2 > .10$ (i.e., correlation ratios > .30) are generally significant beyond the .01 level for these data.

b See Appendix I for variable definitions.

Table 3

Canonical Correlation Summary[a] for the Contextual Variable Subsets Overall Classes and Classes Separated by Level Using Total, Pooled Within and Between Analytic Approaches

Data Base/ Analysis Type	Contextual Variable Subset A				B				C				D				E				F			
	1st		2nd		1st		2nd		1st		2nd		1st		2nd		1st		2nd		1st		2nd	
Overall Classes:																								
Total	11	(B)	05	(I)	18	(I)	12	(B)	19	(B)	13	(I)	27	(B)	15	(I)	46	(B)	22	(I)	41	(B)	17	(I)
Pooled Within	08	(I)	04	(B)	19	(I)	14	(B)	18	(B-I)	14	(IB)	24	(B)	18	(I)	41	(B)	20	(I)	28	(B)	17	(I)
Between	58	(B)	34	(I)	82	(B)	64	(I)	86	(B)	71	(I)	85	(B)	61	(I)	90	(B)	66	(I)	83	(BI)	69	(I-B)
Senior High School Classes:																								
Total	15	(B)	03	(I)	21	(I)	19	(B)	28	(B)	19	(I)	33	(B)	24	(I)	47	(B)	27	(I)	43	(B)	19	(I)
Pooled Within	12	(B)	08	(I)	25	(I)	20	(B)	23	(B)	15	(I)	29	(I)	26	(B)	45	(B)	24	(I)	36	(B)	22	(I)
Junior High School Classes:																								
Total	17	(B)	12	(I)	24	(B)	20	(I)	22	(I-B)	17	(B)	28	(B)	17	(I)	42	(B)	18	(I)	28	(B)	23	(I)
Pooled Within	12	(I)	07	(B)	25	(B)	18	(I)	24	(I-B)	18	(B)	30	(B)	14	(I)	43	(B)	14	(I)	25	(B)	19	(I)

[a] Table entries are canonical correlations (decimal points omitted) for 1st and 2nd canonical variates. Letters in parentheses identify variate as either instructional (I) or behavioral (B) or both (I-B or B-I denotes bi-polarity). Canonical R's significant at $p < .05$ are underlined. Due to small sample sizes, between school analyses cannot proceed at other than the overall level.

Table 4

Mean, Standard Deviations and Ranges
of Percentages of Time on Instruction and Behavior
Overall Classes, by Schooling Level, and by Subject

Variable	Overall	Senior High	Junior High	English	Math	Social Studies	Science	The Arts	Foreign Language	Vocational Education	P.E.
Instruction											
$\bar{X}$	76.4	75.6	77.4	74.8	78.9	76.1	76.1	75.9	83.7	74.5	77.4
S.D.	14.8	15.6	13.7	16.1	12.9	15.4	14.6	15.7	11.6	14.7	13.6
Range	9.7-100.0	9.7-100.0	27.0-99.8	9.7-99.6	34.6-99.5	31.0-98.7	39.1-98.8	36.5-99.2	55.1-98.8	24.3-98.5	45.1-100.0
Behavior											
$\bar{X}$	2.0	1.4	2.9	2.1	2.4	2.0	2.5	1.9	1.4	1.6	1.5
S.D.	2.7	2.0	3.2	2.4	3.1	2.6	3.5	2.6	1.8	2.1	2.2
Range	0.0-24.6	0.0-23.6	0.0-24.6	0.0-13.6	0.0-23.6	0.0-17.0	0.0-24.6	0.0-15.7	0.0-8.7	0.0-11.3	0.0-10.6

Table 5

Canonical Correlation Summaries[a] for the Contextual Variable Subsets Separately by Subject Matter Using Pooled Within Approach

Subject Matter	Contextual Variable Subset																							
	A				B				C				D				E				F			
	1st		2nd		1st		2nd		1st		2nd		1st		2nd		1st		2nd		1st		2nd	
English	31	(I)	04	(B)	30	(I)	20	(B)	33	(I)	26	(B)	38	(I)	19	(B)	48	(B)	41	(I)	40	(B)	29	(I)
Mathematics	25	(I)	06	(B)	36	(B-I)	22	(IB)	34	(B)	28	(I)	47	(B)	32	(I)	55	(B)	28	(I)	42	(B)	19	(I)
Social Studies	16	(I)	10	(B)	30	(B-I)	18	(IB)	38	(B-I)	24	(IB)	34	(B)	29	(I)	54	(B)	42	(I)	39	(B)	12	(I)
Science	25	(I)	20	(B)	38	(IB)	20	(B-I)	49	(B-I)	25	(IB)	42	(B-I)	25	(IB)	54	(B)	33	(I)	37	(I)	33	(B)
The Arts	26	(B)	23	(I)	52	(I)	27	(B)	32	(I)	16	(B)	43	(I)	35	(B)	55	(I)	41	(B)	43	(I)	19	(B)
Foreign Language	34	(I)	24	(B)	61	(I)	51	(B)	62	(B)	56	(I)	66	(B)	37	(I)	79	(B)	39	(I)	64	(BI)	32	(I-B)
Vocational Ed.	25	(B)	06	(I)	33	(B)	25	(I)	38	(IB)	31	(B-I)	34	(I-B)	26	(BI)	47	(B)	27	(I)	49	(B)	26	(I)
Physical Ed.	33	(I-B)	22	(BI)	51	(B)	34	(I)	59	(I)	47	(B)	Insufficient Data				60	(I)	44	(B)	38	(I)	22	(B)

[a] See Table 3

Table 6

Canonical Loadings for Total,
Pooled Within and Between Analysis
Over All Classes for Contextual Variable Subset A

	Canonical Variates and Loadings					
	Total		Pooled Within		Between	
Variables	1st	2nd	1st	2nd	1st	2nd
Contextual:						
A1. Sex	50	-20	-22	64	46	09
A2. Race/Ethnicity	84	-19	-61	00	77	43
A3. Educational Attainment	17	96	71	40	12	-02
A4. Years of Teaching Experience	40	49	57	-52	62	-38
Time:						
Instruction	-28	96	96	-29	-29	96
Behavior	98	07	06	100	98	22
Canonical R_2	.11	.05	.08	.04	.58	.34
Canonical R^2	.012	.003	.006	.002	.336	.116
Significance*	.181	.614	.600	.763	.215	.471

* Based upon Bartlett's Chi-Square test for significant remaining eigenvalues.

Table 7

Canonical Loadings for Total,
Pooled Within and Between Analyses
Over All Classes for Contextual Variable Subset B

Variables	Canonical Variates and Loadings					
	Total		Pooled Within		Between	
	1st	2nd	1st	2nd	1st	2nd
Contextual:						
B1. Professionalism	-10	-04	10	-45	12	-64
B2. Reason in teaching	35	03	37	30	-11	-05
B3. Educational beliefs: Discipline & control	36	38	-02	08	73	28
B4. Educational beliefs: Basics	03	-06	-12	-12	25	39
B5. Educational beliefs: Student concern	15	-34	15	-29	05	19
B6. Educational beliefs: Student participation	-61	30	-63	03	-07	-07
B7. Academics	27	-29	29	-33	09	-13
B8. Functions: Intellectual	25	01	37	00	-09	-24
B9. Functions: Personal	-03	07	-10	19	-12	28
B10. Functions: Vocational	-27	20	-34	20	-13	26
B11. Choose the education profession again?	-53	-25	-41	-27	-34	-21
Time:						
Instruction	72	-69	82	-57	15	99
Behavior	54	84	38	93	97	-22
Canonical R_c	.18	.12	.19	.14	.82	.64
Canonical R^2	.032	.014	.036	.020	.672	.410
Significance*	.029	.361	.004	.122	.170	.539

* See Table 6

Table 8

Canonical Loadings for Total,
Pooled Within and Between Analyses
Over All Classes for Contextual Variable Subset C

	Canonical Variates and Loadings					
	Total		Pooled Within		Between	
Variables	1st	2nd	1st	2nd	1st	2nd
Contextual:						
C1. Like teaching	04	-20	05	05	-78	06
C2. Adequacy of help	-46	28	-42	09	-26	22
C3. Satisfaction with evaluation	05	40	-19	58	-22	-04
C4. Adequacy of resources	-27	-46	03	-35	-16	16
C5. Influence: Instructional	-36	16	-09	06	-14	42
C6. Organizational climate: Prob.solving/decis.-making	-03	08	-09	-07	13	09
C7. Organizational climate: Principal leadership	04	01	-39	-11	15	-25
C8. Organizational climate: Staff cohesiveness	10	15	07	19	06	21
C9. Main problem: School organization	-19	-32	13	-16	01	-06
C10. Grading of school	-29	-14	-12	-27	03	02
C11. Satisfaction with curriculum	-64	21	-70	-05	-54	-07
Time:						
Instruction	-17	99	-73	69	55	84
Behavior	100	-01	82	57	79	-61
Canonical R_2	.19	.13	.18	.14	.86	.71
Canonical R^2	.036	.017	.032	.020	.740	.504
Significance*	.005	.200	.008	.125	.045	.306

* See Table 6

Table 9

Canonical Loadings for Total,
Pooled Within and Between Analyses
Over All Classes for Contextual Variable Subset D

	Canonical Variates and Loadings					
	Total		Pooled Within		Between	
Variables	1st	2nd	1st	2nd	1st	2nd
Contextual:						
D1. Reliance on texts/guides	53	-03	04	-02	76	18
D2. Use of behavioral objectives	08	-17	-13	-17	67	11
D3. Homework expectations	-39	40	-39	36	03	03
D4. Relevancy of content	-20	-13	-38	01	65	-24
D5. Appropriateness of content	-57	-08	-61	27	-09	-53
D6. Grouping style: Alone	-46	-61	-68	-48	13	-15
D7. Grouping style: Small group	13	-03	06	-06	16	03
D8. Grouping style: Whole class	-06	67	01	74	12	-32
D9. Hours/week preparation	-14	-21	-05	-18	-18	-16
D10. Extent of individualization	01	-42	-31	-31	47	14
Time:						
Instruction	-08	96	03	100	-34	94
Behavior	100	-10	97	-24	96	27
Canonical R_2	.27	.15	.24	.18	.85	.61
Canonical R^2	.073	.023	.058	.032	.723	.372
Significance*	.000	.063	.000	.006	.063	.530

* See Table 6

Table 10

Canonical Loadings for Total,
Pooled Within and Between Analyses
Over All Classes for Contextual Variable Subset E

	Canonical Variates and Loadings					
	Total		Pooled Within		Between	
Variables	1st	2nd	1st	2nd	1st	2nd
Contextual:						
E1. Teacher affect	-70	05	-62	-02	-78	04
E2. Teacher favoritism	35	-20	37	03	33	-40
E3. Instructional practices	-65	20	-75	-04	-48	07
E4. Task difficulty	43	16	35	31	51	-19
E5. Student decision-making	-26	-59	-14	-70	-45	12
E6. Student apathy	81	-27	86	-09	65	-15
E7. Student compliance	-54	10	-64	-16	-25	14
E8. Class dissonance	88	-07	81	-06	77	-05
E9. Student cliqueness	35	-32	33	-15	34	-38
E10. Student competitiveness	14	43	-15	35	62	-05
E11. Peer Esteem	-56	28	-52	13	-60	38
E12. Class physical appearance	-46	03	-53	-19	-26	15
E13. Relevancy of content	-17	29	-40	03	42	11
E14. Subject preference	-42	01	-46	-18	-38	20
Time:						
Instruction	-11	99	-31	95	24	97
Behavior	100	-08	100	10	95	-31
Canonical R_2	.46	.22	.41	.20	.90	.66
Canonical R^2	.212	.048	.168	.040	.810	.436
Significance*	.000	.000	.000	.001	.192	.796

* See Table 6

Table 11

Canonical Loadings for Total,
Pooled Within and Between Analyses
Over All Classes for Contextual Variable Subset F

Variables	Total		Pooled Within		Between	
	1st	2nd	1st	2nd	1st	2nd
Context:						
F1. Class size	53	-08	58	17	41	-72
F2. Period number	29	22	52	13	-05	13
F3. Track: Low	15	-10	19	-14	19	-05
F4. Track: Average	-09	05	01	-16	-06	46
F5. Track: High	-22	67	-31	74	-09	24
F6. Scheduled class duration	21	52	-14	28	33	27
F7. Percent Male	06	-38	10	-46	05	25
F8. Mean age	-73	10	-56	-10	-67	41
F9. Percent White	-45	-28	16	28	-55	-04
Time:						
Instruction	26	97	27	96	63	78
Behavior	91	-42	89	-45	73	-68
Canonical R_2	.41	.17	.28	.17	.83	.69
Canonical R^2	.168	.029	.078	.029	.689	.476
Significance*	.000	.007	.000	.005	.017	.173

* See Table 6

Table 12

Comparative Level of Schooling and Subject Area Summaries of the Highest Loading ($|X| \geq .45$) Student Class Perception Variables (Subset E) in Predicting Time on Behavior

Contextual Variable	Over All Classes	Senior High School	Junior High School	English	Math	Social Studies	Science	The Arts	Vocational Education
Teacher affect	-X	-X	-X		-X	-X	-X		-X
Teacher favoritism						X			X
Instructional practices	-X	-X	-X	-X	-X	-X	-X		-X
Task difficulty									X
Student decision-making								-X	
Student apathy	X	X	X	X	X	X	X		X
Student compliance	-X	-X	-X	-X	-X		-X		-X
Class dissonance	X	X	X	X	X	X	X	X	X
Student cliqueness				X					
Student competitiveness									
Peer esteem	-X	-X			-X		-X		-X
Class physical appearance	-X	-X	-X		-X	-X			
Subject relevance				-X	-X		-X		
Subject liking	-X	-X			-X	-X			

APPENDIX I

Table I.1

Data Description* for Contextual Variable Subset A: Teacher Demongraphy/Biography

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions Instruction	Behavior
A1. Sex (1=male; 2=female)	1.47	.50	-.02	.05
A2. Race/Ethnicity (1=white; 2=non-white)	1.16	.37	-.04	.09
A3. Educational attainment (1=High school diploma; 2=Associate degree/vocational certificate; 3=Bachelor's degree; 5=Graduate/professional degree)	3.41	.58	.04	.02
A4. Years of teaching experience	10.87	7.91	.01	.05

* In this and the following tables, the statistics are computed over all classes.

Table I.2

Data Description for Contextual Variable Subset B:
Teacher Professional Beliefs and Practices

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions: Instruction	Correlations With Time Proportions: Behavior
B1. Professionalism (A standardized composite of variables relating to (1) post credential work, (2) participation in professional training programs, (3) membership in educational organizations, and (4) reading of articles/ reports in education)	.01	.62	-.01	-.01
B2. Reason entered teaching profession (1=working conditions, recommendations, scholarship/fellowship, economic considerations--"extrinsic" reasons; 2=Interest in subject, inherent values in profession, liking of young people, to help others--"intrinsic" reasons)	1.66	.47	.04	.04
B3. Discipline and control (An educational beliefs scale comprised of items like "An orderly classroom is the major prerequisite to effective learning.")	4.47	.78	.02	.07
B4. Basic subjects and skills (An educational beliefs scale comprised of items like "The teaching of basic skills and subject matter is the most important function of the school.")	4.19	1.04	.01	-.00
B5. Student concern (An educational beliefs scale comprised of items like "The best learning atmosphere is created when the teacher takes an active interest in the problems and affairs of students.")	5.19	.77	.05	-.02
B6. Student participation (An educational beliefs scale comprised of items like "Student initiation and participation in planning classroom activities are essential to the maintenance of an effective classroom atmosphere.")	3.72	.86	-.10	-.03
B7. "Soft" on academic standards (A school-specific attitude measure comprised of items like "Too many students are allowed to graduate from this school without learning very much.")	3.03	.46	.06	-.00
B8.* Single most important schooling function: Intellectual (2=yes; 1=no)	1.48	.50	.03	.03
B9.* Single most important schooling function: Personal (2=yes; 1=no)	1.29	.45	-.01	.00
B10.* Single most important schooling function: Vocational (2=yes; 1=no)	1.14	.35	-.05	-.01
B11. Would you choose the education profession again? (2=yes; 1=no)	1.65	.48	-.05	-.08

* 1's on variables B8, B9 and B10 signify that the remaining function, social, was the single most important one selected.

Table I.3

Data Description for Contextual Variable Subset C:
Teacher Perceptions--Organizational Focus

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions: Instruction	Behavior
C1. Best part of job (2=actual teaching/working with students; 1=the rest, e.g., preparation, routines, formal/informal staff interactions, parent contacts, etc.)	1.93	.26	-.03	.01
C2. Adequacy of help (2=enough; 1=not enough)	1.68	.47	.05	-.09
C3. Satisfaction with evaluation (a 4-point satisfaction, single item scale)	2.61	.92	.05	.01
C4. Adequacy of resources (2=adequate; 1=inadequate)	1.70	.46	-.05	-.05
C5. Teacher influence: Curriculum and instruction (a 3-point influence scale comprised of items like "How much influence do teachers at your school have in decisions about changes in curriculum?")	2.45	.33	.03	.07
C6. Problem-solving/decision-making (a 6-point organizational climate scale comprised of items like "When a problem comes up, this school has viable procedures for working on it.")	3.97	1.04	.01	-.01
C7. Principal leadership (a 6-point organizational climate scale comprised of items like "The principal inspires staff members to work hard.")	4.13	1.06	.00	.01
C8. Staff cohesiveness (a 6-point organizational climate scale comprised of items like "There is a great deal of cooperative effort among staff members.")	4.06	.79	.02	.02
C9. Organization of the school is a problem (1=no; 2=minor, 3=major)	1.70	.69	-.04	-.04
C10. Grading of the school (1=F; 2=D; 3=C; 4=B; 5=A)	3.60	.91	-.01	-.06
C11. Satisfaction with planning and teaching (a 4-point scale comprised of items in reference to selecting instructional materials, evaluating students, etc.)	3.17	.44	.05	-.12

Table I.4

Data Description for Contextual Variable Subset D:
Teacher Perceptions and Practices--Class-Specific Focus

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions	
			Instruction	Behavior
D1. Influence of texts/curriculum guides on teaching (4-point scale)	2.27	.88	-.02	.15
D2. Use of behavioral objectives (4-point frequency scale)	2.68	.84	-.03	.03
D3. Homework expectations (5-point scale from "none" to "more than 2 hours")	1.90	.74	.07	-.11
D4. Relevancy of content "now" and "later in life" (4-point usefulness scale)	3.50	.55	-.01	-.05
D5. Appropriateness of content in terms of ability, ethnicity/culture and interests (on 5-point scale from 0% to 100% of students in the class)	4.04	.82	.00	-.16
D6. Grouping style: Alone (4-point frequency scale from "never" to "always or most of the time")	2.95	.72	-.08	-.12
D7. Grouping style: Small groups (scaled as in D6)	2.74	.73	-.01	.04
D8. Grouping styles: Whole class (scaled as in D6)	2.76	.82	.10	-.03
D9. Hours/week preparation (6-point scale from "0-1" to "16 or more")	2.64	1.04	-.03	-.04
D10. Extent of individualization (5-point scale comprised of items in reference to methods such as use of different contents, instructional techniques, time schedules, etc., for different students)	2.69	.87	-.06	.01

Table I.5

Data Description for Contextual Variable Subset E:
Student Perceptions of Content and Classroom Learning Environment

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions Instruction	Behavior
E1 - E12 are 4-point class climate scales comprised of items such as those used below as examples:				
E1. Teacher affect ("This teacher is friendly.")	3.24	.31	.05	-.32
E2. Teacher favoritism ("This teacher likes some students in this class better than others.")	2.27	.37	-.06	.17
E3. Instructional practices ("The teacher tells us how to correct the mistakes in our work.")	3.07	.30	.08	-.31
E4. Task difficulty ("Some of the things the teacher wants us to learn are just too hard.")	2.06	.31	.01	.20
E5. Student decision-making ("Students help decide what we do in this class.")	2.28	.35	-.12	-.12
E6. Student apathy ("Students don't care about what goes on in this class.")	1.99	.36	-.10	.38
E7. Student compliance ("The students in this class usually do the work assigned.")	3.24	.27	.05	-.25
E8. Class dissonance ("Students in this class yell at each other.")	2.05	.48	-.05	.41
E9. Student cliqueness ("Certain students stick together in small groups.")	2.69	.33	-.09	.17
E10. Student competitiveness ("There is a lot of competition in this class.")	2.39	.30	.09	.06
E11. Peer esteem ("I like working with other students in this class.")	3.00	.23	.09	-.27
E12. Class physical appearance ("I like the way this classroom looks.")	2.66	.45	.03	-.21
E13. Relevancy of content "now" and "later in life" (4-point usefulness scale)	3.07	.36	.07	-.08
E14. Subject preference (4-point liking scale)	3.12	.46	.02	-.20

Table I.6

Data Description for Contextual Variable Subset F:
Classroom Characteristics

Variable Description and Code Number	Mean	Standard Deviation	Correlations With Time Proportions: Instruction	Behavior
F1. Class size (number of students)	22.13	8.44	.04	.20
F2. Period number	3.68	1.91	.07	.09
F3.* Track: Low (1=low tracked; 0=not low tracked)	.12	.32	-.00	.06
F4.* Track: Average (as in F3)	.21	.41	-.00	-.04
F5.* Track: High (as in F3)	.18	.38	.08	-.13
F6. Scheduled class duration (in minutes)	52.00	5.75	.11	.04
F7. Percent males	49.86	22.44	-.06	.05
F8. Mean age	14.77	1.75	-.06	-.28
F9. Percent white	65.48	40.03	-.09	-.15

* 0's on variables F3, F4 and F5 signify that the class is not tracked and is heterogeniously formed.

APPENDIX II

Table II.1

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset A

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
A1. Sex	06	-01	-47	44	17	-68	-75	06	42	-91	-56	62	04	-65	61	57
A2. Race/Ethnicity	-12	-22	-84	-06	-62	39	-24	72	-37	-17	-13	-55	35	-50	-53	29
A3. Educational Attainment	41	86	33	-04	-61	-46	78	21	72	53	48	10	35	77	43	16
A4. Years Teaching Experience	-74	67	28	78	36	-08	32	-50	-03	04	81	15	-72	45	48	-73
Time:																
Instruction	-17	99	98	-18	84	-54	90	-45	77	-64	98	-22	51	86	21	98
Behavior	100	-04	-11	99	31	95	07	100	44	90	-10	100	78	-62	96	-29
Canonical R	.12	.08	.12	.07	.31	.04	.25	.06	.16	.10	.25	.20	.26	.23	.25	.06
Canonical R^2	.014	.006	.014	.005	.096	.002	.063	.004	.026	.010	.063	.040	.068	.053	.063	.004
Significance*	.304	.430	.579	.630	.065	.970	.430	.926	.851	.764	.273	.284	.192	.179	.385	.913

* Based upon Bartlett's Chi-Square test for significant remaining eigenvalues

Table II.2

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset B

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
B1. Professionalism	49	-43	01	-23	-19	10	-57	44	-51	34	39	29	-13	-29	-28	42
B2. Reason in teaching	04	04	56	29	-07	40	11	12	-08	30	48	53	05	16	05	-08
B3. Didcipline and control	13	-44	37	-36	-65	21	-04	-35	-14	-14	08	-23	15	-31	27	-01
B4. Basic subjects and skills	09	-38	05	-23	-13	-14	-15	-43	-00	-42	-10	15	09	-18	-01	-13
B5. Student Concern	19	-41	25	37	02	09	-76	-18	07	51	16	-31	-18	06	52	12
B6. Student participation	-57	-40	-28	01	-24	-29	-04	-41	-01	15	-64	24	-45	-33	15	-27
B7. "Soft" on academic standards	30	-17	18	41	08	-19	-27	20	47	-00	26	-61	74	04	05	-16
B8. Functions: Intellectual	52	06	26	-41	09	60	-14	-57	40	-01	20	04	59	-29	49	16
B9. Functions: Personal	-33	-10	19	34	-04	-40	-10	44	10	10	-01	13	-42	61	-17	-06
B10. Functions: Vocational	-35	-06	-14	-14	07	-19	45	25	-37	34	03	-19	-49	-18	-19	-45
B11. Choose education again?	-20	-52	-23	10	-46	-19	-25	-35	-23	-03	-10	08	03	-28	-58	-21
Time:																
Instruction	98	21	10	100	88	48	-78	63	-72	69	67	-74	99	12	33	94
Behavior	-39	92	93	-37	-62	78	87	49	84	54	45	89	-24	97	93	-38
Canonical R_2	.25	.20	.25	.18	.30	.20	.36	.22	.30	.18	.38	.20	.52	.27	.33	.25
Canonical R^2	.063	.040	.063	.032	.090	.040	.130	.048	.090	.032	.144	.040	.270	.073	.109	.063
Significance*	.001	.055	.100	.417	.721	.870	.439	.815	.915	.971	.741	.966	.057	.772	.459	.649

* See Table II.1

Table II.3

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset C

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
C1. Best part of job	13	27	-05	-17	27	07	28	-16	34	33	-14	-17	-29	48	-34	-69
C2. Adequacy of help	-41	15	25	04	13	-23	-13	-09	-06	07	-38	-29	52	52	02	-43
C3. Satisfaction with evaluation	-05	64	20	36	01	-08	54	51	-23	32	-06	24	-01	48	46	-33
C4. Adequacy of resources	-07	-16	-26	-59	-71	-33	-16	-27	-25	40	-16	-18	19	-14	-23	-03
C5. Influence: Instructional	-04	17	05	-08	-07	12	-10	15	-34	24	-03	16	-02	05	-10	14
C6. Prob.solving/Decis.-making	-04	-04	11	-08	11	-30	20	19	-35	-12	06	-35	-40	53	05	14
C7. Principal leadership	-26	-03	36	-14	11	-49	00	17	-46	-13	-24	-13	-02	57	-03	05
C8. Staff cohesiveness	-07	17	-18	18	09	-03	27	02	07	-24	-36	-04	-44	50	45	13
C9. Prob: School Organization	-02	-20	-23	-05	-23	-22	-04	06	71	08	-30	-19	-17	-34	02	-06
C10. Grading of school	-07	-25	14	-21	-08	06	-01	13	-28	-36	-24	-37	-22	-01	-20	-01
C11. Satisfaction with Curriculum	-81	05	29	-04	37	-50	-52	57	-03	16	-40	-01	-13	37	04	-24
Time:																
Instruction	-54	84	86	51	100	02	-01	100	-72	69	-70	71	92	40	76	-65
Behavior	92	38	-71	71	-25	97	94	-36	84	54	87	50	-51	86	64	77
Canonical R_2	.23	.15	.24	.18	.33	.26	.34	.28	.38	.24	.49	.25	.32	.16	.38	.31
Canonical R^2	.053	.023	.058	.032	.109	.068	.116	.078	.144	.058	.240	.063	.102	.026	.144	.096
Significance*	.057	.452	.167	.471	.272	.463	.365	.498	.485	.825	.160	.850	.975	.995	.133	.302

* See Table II.1

Table II.4

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset D

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
D1. Reliance on texts/guides	10	16	-09	-03	13	-21	01	24	47	23	15	-21	06	-10	-37	-41
D2. Use of behavioral objectives	-35	01	-01	27	-04	-12	01	20	-12	-18	18	-37	-13	-07	-18	-15
D3. Homework expectations	-06	-33	-49	31	-33	-30	-41	02	-53	28	-28	-21	23	-54	28	-01
D4. Relevancy of content	-41	-34	-18	14	11	-04	-37	-13	-39	21	-18	-39	-21	04	23	-09
D5. Appropriateness of content	-44	-64	-40	28	-14	-17	-65	01	-50	-42	-44	25	12	-01	43	-25
D6. Grouping style: Alone	-60	16	-71	-49	-76	-13	-31	-44	-06	01	-72	-40	-53	-23	-04	-91
D7. Grouping style: Small group	-21	03	19	53	-22	12	-16	60	34	-36	68	08	-10	-45	21	24
D8. Grouping style: Whole class	50	-53	-09	13	49	-77	-11	-28	-04	38	25	05	79	-30	26	12
D9. Hours/week preparation	-03	08	-05	-44	04	-20	07	-34	20	-06	-04	-25	-36	08	62	-06
D10. Individualization	-43	21	-34	23	-44	-33	-16	-06	08	03	-17	37	-59	-29	-11	-27
Time:																
Instruction	72	-69	-34	94	81	-59	-27	96	-41	91	-77	64	97	-26	79	61
Behavior	56	83	100	06	40	92	100	-10	97	23	84	54	13	99	-66	75
Canonical R_c	.29	.26	.30	.14	.38	.19	.47	.32	.34	.29	.42	.25	.43	.35	.34	.26
Canonical R^2	.084	.068	.090	.020	.144	.036	.221	.102	.116	.084	.176	.063	.185	.123	.116	.068
Significance*	.000	.001	.044	.750	.120	.854	.004	.195	.409	.460	.351	.786	.137	.323	.303	.522

* See Table II.1

Table II.5

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset E

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
E1. Teacher affect	-60	-08	-58	09	-36	-23	-58	12	-68	-02	-45	-18	19	-16	-52	-13
E2. Teacher favoritism	36	11	35	-17	11	32	32	-03	49	-23	35	-06	01	24	50	-09
E3. Instructional practices	-68	-09	-78	06	-49	-32	-78	-10	-69	-16	-52	-10	36	-03	-71	05
E4. Task difficulty	32	34	38	21	30	19	19	26	37	04	-07	56	-36	08	49	14
E5. Student decision-making	-14	-72	-15	-54	29	-36	-01	25	-17	-15	-08	-14	-26	-44	-16	-60
E6. Student apathy	86	-07	78	-04	55	28	81	07	85	19	76	29	-44	34	80	-17
E7. Student compliance	-51	-24	-71	10	-61	-35	-53	-55	-43	-14	-65	-44	21	-07	-61	16
E8. Class dissonance	81	-05	73	04	67	34	71	-18	79	09	66	17	-39	57	54	-11
E9. Student cliqueness	42	-16	19	07	54	-22	32	21	39	-19	20	-46	-13	38	21	20
E10. Student competitiveness	-08	33	-24	37	-13	-11	-22	03	01	-24	-37	21	52	33	16	16
E11. Peer Esteem	-59	03	-40	27	-23	17	-56	04	-27	15	-62	-24	19	-11	-72	-37
E12. Class physical appearance	-51	-24	-49	-09	-17	-36	-49	13	-64	17	-29	-14	31	-35	-36	-24
E13. Relevancy of content	-38	-02	-40	11	-45	-05	-47	-34	-42	24	-47	18	-03	-14	-30	20
E14. Subject preference	-52	-21	-36	-19	-18	-24	-46	16	-53	-25	-43	07	34	-09	-31	-11
Time:																
Instruction	-30	95	-32	95	-55	84	-44	90	-30	95	-61	79	89	46	-14	99
Behavior	99	11	100	06	93	36	100	10	100	06	95	31	-56	83	100	07
Canonical R_2	.45	.24	.43	.14	.48	.41	.55	.28	.54	.42	.54	.33	.55	.41	.47	.27
Canonical R^2	.203	.058	.185	.020	.230	.168	.303	.078	.292	.176	.292	.109	.303	.168	.221	.073
Significance*	.000	.004	.000	.881	.000	.011	.001	.632	.000	.043	.031	.620	.002	.130	.012	.613

* See Table II.1

Table II.6

Canonical Loadings for Pooled Within Analyses
by Schooling Level and by Subject Area
for Contextual Variable Subset F

Variables	Level of Schooling				Subject Areas											
	Senior		Junior		English		Math		Social Studies		Science		The Arts		Vocational Education	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Contextual:																
F1. Class size	64	08	35	02	10	41	20	-36	38	-30	-50	46	80	-06	66	-53
F2. Period number	51	09	44	-05	22	50	64	44	31	55	46	24	-03	12	43	-14
F3. Track: Low	26	-22	07	-02	18	-18	-01	-02	42	15	12	53	NA*	NA	NA	NA
F4. Track: Average	-13	-12	28	-13	10	-11	10	12	-19	-04	-46	-11	NA	NA	NA	NA
F5. Track: High	-16	81	-54	30	-59	08	-54	33	-15	10	11	-42	NA	NA	NA	NA
F6. Scheduled class duration	-09	37	-21	05	-28	-22	-04	24	-02	04	-12	-.1	07	-95	14	42
F7. Percent Male	08	-17	-08	-88	72	-39	34	48	26	-48	06	03	-53	-22	14	-34
F8. Mean age	-65	17	-40	-35	-01	-41	-41	52	-60	31	27	02	-61	-28	-59	-30
F9. Percent White	07	33	26	-04	-07	31	19	-12	-31	-39	46	-29	-26	33	39	19
Time:																
Instruction	30	95	43	90	-49	87	-29	96	-14	99	99	-17	77	-64	53	85
Behavior	88	-48	79	-61	97	24	100	-07	100	-06	-11	99	57	83	85	-53
Canonical R_2	.36	.22	.25	.19	.40	.29	.42	.19	.39	.12	.37	.33	.43	.19	.49	.26
Canonical R^2	.130	.048	.063	.036	.160	.084	.176	.036	.152	.014	.137	.109	.185	.036	.240	.068
Significance**	.000	.006	.034	.190	.015	.185	.113	.856	.471	.992	.250	.326	.045	.642	.000	.124

* Not applicable

** See Table II.1